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**Search Results - Record(s) 1 through 1 of 1 returned.**☒ 1. Document ID: US 5242746 A

L1: Entry 1 of 1

File: USPT

Sep 7, 1993

US-PAT-NO: 5242746

DOCUMENT-IDENTIFIER: US 5242746 A

TITLE: Friction elements of composite carbon-carbon material and of differential texture

DATE-ISSUED: September 7, 1993

## INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Bommier; Christophe	Paris			FR
Chaire; Jean-Louis	Levallois-Perret			FR

US-CL-CURRENT: 442/247; 188/250C, 188/251A, 188/251R, 192/107M, 192/107R, 428/304.4, 428/316.6, 428/317.9, 428/408, 428/902, 428/908.8

## ABSTRACT:

A multi-layer friction element is disclosed consisting of carbon-carbon composite material comprising a structure layer of so-called "coarse" texture comprising segments of rovings and at least one friction layer of so-called "fine" texture comprising fibre segments. A method also is disclosed for producing the friction element by preparation of a fibrous substrate by introducing segments of roving and/or fibers into a mould preferably by means of a distribution apparatus. Further disclosed is an apparatus for automatically obtaining a fibrous substrate of predetermined texture.

12 Claims, 24 Drawing figures

Exemplary Claim Number: 1

Number of Drawing Sheets: 8

Full	Title	CLS.1	SEQ.1	ATT.1

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(5242746[PN]).USPT.	1

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L10: Entry 19 of 30

File: DWPI

Dec 4, 1991

DERWENT-ACC-NO: 1991-356144  
DERWENT-WEEK: 199149  
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TITLE: Multilayer friction element - comprises differential texture carbon-carbon composite material

INVENTOR: BOMMIER, C; CHAREIRE, J ; CHAREIRE, J L

PRIORITY-DATA: 1991FR-0003827 (March 25, 1991), 1990FR-0006488 (May 10, 1990)

## PATENT-FAMILY:

PUB-NO	PUB-DATE	LANGUAGE	PAGES	MAIN-IPC
EP 459916 A	December 4, 1991		000	
BR 9101857 A	December 17, 1991		000	
CA 2041921 A	November 11, 1991		000	
DE 69108776 E	May 18, 1995		000	C04B035/52
EP 459916 B1	April 12, 1995	F	025	C04B035/52
FR 2661866 A	November 15, 1991		000	
FR 2674587 A1	October 2, 1992		038	F16D069/02
JP 06241253 A	August 30, 1994		011	F16D069/02
US 5242746 A	September 7, 1993		016	F16D069/02

INT-CL (IPC): B32B 9/00; B32B 33/00; B64C 25/42; C04B 35/52; C04B 35/80; C08J 5/14; C09K 3/14; F16D 13/60; F16D 69/00; F16D 69/02

ABSTRACTED-PUB-NO: EP 459916A  
BASIC-ABSTRACT:

In a multilayer friction element comprising a carbon-carbon composite friction layer (2) bonded to at least one face of a carbon-carbon composite structural layer (1), the novelty is that (a) the structural layer (1) is formed from a coarse texture fibrous substrate which has a mean pore diameter of more than 100 microns and which consists of carbon fibre (precursor) clusters; and (b) the friction layer (2) is formed from a fine texture fibrous substrate which has a mean pore diameter of less than 50 microns and which consists of randomly distributed carbon (precursor) fibre segments. Processes for mfg. the friction element and a device for distributing carbon fibre and/or cluster segments in a mould are also claimed.

USE/ADVANTAGE - The friction element is esp. useful for high performance brakes for aircraft. The structural layer has high mechanical strength and high resilience, while the friction layer has good tribological properties and esp. low wear rate.  
ABSTRACTED-PUB-NO:

EP 459916B EQUIVALENT-ABSTRACTS:

A multi-layer friction element comprising a structure layer (1) of carbon-carbon composite material, at least one face of which is covered with a friction layer (2) of carbon-carbon composite material integral with said structure layer (1), characterised in that firstly the structure layer (1) is obtained from a so-called 'coarsely' textured fibrous substrate (5g), representing from 10 to 50% by volume of said layer (1), and having a median pore diameter greater than 100 microns and being constituted by rovings of carbon fibre or carbon fibre precursor, and in that

secondly the friction layer (2) is obtained from a so-called ''finely'' textured fibrous substrate (5f) representing 3 to 25% by volume of said layer (2), and having a median pore diameter of less than 50 microns and being constituted by randomly distributed segments of carbon precursor fibres (6).

US 5242746A

A multilayer carbon-carbon composite has at least one face covered with a friction material.

The structural layer is formed from fibrous material with a coarse texture and a mean pore dia. of above 100 microns composed of carbon fibres (precursors) each containing at least 1000 fibres. The friction layer is formed from fine material having a mean pore size of 50 microns and composed of randomly distributed carbon fibres. Each segment contains at least 10 times the number of fibres found in the structural fibre segments.

ADVANTAGE - The materials have good structural strength and can be used to form aircraft brake pads.

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(L8 AND L9).DWPI.	30

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L10: Entry 7 of 30

File: DWPI

Jun 30, 1998

DERWENT-ACC-NO: 1998-386970

DERWENT-WEEK: 199833

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TITLE: Multilayer carbon composite for use in space craft - is reinforced by carbon fibres which are interlinked by graphite whiskers grown in situ from carbon-containing vapour

INVENTOR: LENNOX, J R; NELSON, D C ; PEPPER, R T

PRIORITY-DATA: 1990US-0591147 (October 1, 1990), 1996US-0744361 (November 7, 1996)

## PATENT-FAMILY:

PUB-NO	PUB-DATE	LANGUAGE	PAGES	MAIN-IPC
US 5773122 A	June 30, 1998		005	B32B005/02

INT-CL (IPC): B32 B 5/02; B32 B 5/08; B32 B 7/04

ABSTRACTED-PUB-NO: US 5773122A

## BASIC-ABSTRACT:

A carbon composite comprises a number of carbon layers which are reinforced by carbon fibres which are interlinked by graphite whiskers. The carbon body is preferably formed with a metal catalyst dispersed within the pores of it and the whiskers are grown in a carbon-containing vapour. The composite is at least partially impregnated with a densified and pyrolysed carbonaceous material.

USE - For use in wide range of high temperature, high performance applications such as in air and space craft.

ADVANTAGE - The average interlaminar tensile strength is at least 1.9 times greater than the strength of the equivalent composite without the whiskers.

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**Search Results - Record(s) 1 through 1 of 1 returned.**☒ 1. Document ID: US 6444102 B1

L1: Entry 1 of 1

File: USPT

Sep 3, 2002

US-PAT-NO: 6444102DOCUMENT-IDENTIFIER: US 6444102 B1

TITLE: Carbon fiber electrical contacts

DATE-ISSUED: September 3, 2002

## INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Tucci; Michael	New York City	NY		
Uruburu; Philip	Central Islip	NY		
Veselaski; Stephen	Bay Shore	NY		

US-CL-CURRENT: 204/279; 200/252, 200/262, 200/275, 439/87

## ABSTRACT:

A nonmetallic electrical contact or wiper composed of material such as carbon fiber, in which an electrical signal is transmitted along a length of the carbon fibers. The carbon fibers can be fused or conductively bonded together. The carbon fibers can be affixed to a carrier using various bonding and fastening techniques. The carrier can be electrically conductive or not depending on the application and can be affixed to the carbon fibers by bonding, fusing, or mechanical fastening. Alternatively, the electrical contact can be formed entirely from the carbon fiber material, with any carrier being also formed of carbon fiber material.

23 Claims, 17 Drawing figures

Exemplary Claim Number: 1

Number of Drawing Sheets: 4

Full Title

CLS.1

SEQ.1 ATT.1

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"6444102".USPT.	1
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<u>L18</u>	l16 and l17	25	<u>L18</u>
<u>L17</u>	l11 and l14 and l15	2436	<u>L17</u>
<u>L16</u>	l11 and l12 and l14	98	<u>L16</u>
<u>L15</u>	nonwoven or non-woven or unwoven or un-woven	51897	<u>L15</u>
<u>L14</u>	aligned or oriented	839502	<u>L14</u>
<u>L13</u>	mat or mats	52009	<u>L13</u>
<u>L12</u>	electric and conductive and resin matrix	600	<u>L12</u>
<u>L11</u>	carbon same (fibers or fibres)	54062	<u>L11</u>

*DB=DWPI; PLUR=YES; OP=ADJ*

<u>L10</u>	l1 and l9	6	<u>L10</u>
<u>L9</u>	electric and conductive and resin matrix	78	<u>L9</u>
<u>L8</u>	l1 and l5	0	<u>L8</u>
<u>L7</u>	l1 and l3	986	<u>L7</u>
<u>L6</u>	l1 and l3 and l5	0	<u>L6</u>
<u>L5</u>	electric same conductive same resin matrix	17	<u>L5</u>
<u>L4</u>	mat or mats	41533	<u>L4</u>
<u>L3</u>	aligned or oriented	181156	<u>L3</u>
<u>L2</u>	nonwoven or non-woven or unwoven or un-woven	38619	<u>L2</u>
<u>L1</u>	carbon same (fibers or fibres)	29956	<u>L1</u>

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(L16 AND L17).USPT,PGPB.	25

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L10: Entry 6 of 6

File: DWPI

DERWENT-ACC-NO: 1968-13918Q

DERWENT-WEEK: 196800

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TITLE: Electrically conductive mouldable materials containing

PRIORITY-DATA: 1966US-0599790 (December 7, 1966)

PATENT-FAMILY:

PUB-NO	PUB-DATE	LANGUAGE	PAGES	MAIN-IPC
US 3406126 A			000	

ABSTRACTED-PUB-NO: US 3406126A

BASIC-ABSTRACT:

Mouldable material of electrical resistivity 105 ohm/cm at 25 deg.C consisting of an non-conductive synthetic resin in which are randomly dispersed 0.05-5% of small diameter conductive carbon filaments having a high length/diameter ratio.

The physical properties of the synthetic resin matrix are not adversely affected by the presence of the small quantity of carbon fibres. The materials are used in making electrically heated flooring and aircraft de-icer boots, and antistatic tyres, rollers and hoses.

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L10: Entry 1 of 6

File: DWPI

Nov 15, 2001

DERWENT-ACC-NO: 2002-097554  
DERWENT-WEEK: 200219  
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TITLE: Electrically conductive resin composition for separators for fuel cells is formed by using thermosetting resin matrix and adding carbon fibers and graphite in a specified amount as filler

INVENTOR: ISHIOKA, K; WATANABE, S ; YASUDOMI, T

PRIORITY-DATA: 2001JP-0066944 (March 9, 2001), 2000JP-0137062 (May 10, 2000), 2000JP-0284464 (September 20, 2000)

## PATENT-FAMILY:

PUB-NO	PUB-DATE	LANGUAGE	PAGES	MAIN-IPC
WO 200185849 A1	November 15, 2001	J	018	C08L101/00
AU 200156665 A	November 20, 2001		000	C08L101/00

INT-CL (IPC): C08 K 3/04; C08 K 7/06; C08 L 101/00; H01 B 1/00; H01 B 1/24; H01 M 8/02

ABSTRACTED-PUB-NO: WO 200185849A  
BASIC-ABSTRACT:

NOVELTY - Electrically conductive resin composition is formed by using a thermosetting resin matrix and adding carbon fibers and graphite in an amount of 40-90 weight% relative to the composition as a filler.

DETAILED DESCRIPTION - INDEPENDENT CLAIMS are also included for the following:

- (1) a molding obtained from the composition;
- (2) a resin-coated metal thin plate material obtained by insert molding the metal thin plate material and forming a resin coating layer from the composition; and
- (3) the manufacture of a separator for fuel cells by molding a separator from the composition and post-curing at 130-300 deg. C.

USE - The composition is used as a material for producing separators for fuel cells.

ADVANTAGE - The composition is produced at low cost and has good processability. Moldings having a high conductivity are produced. The composition is resistant to oxidation and the separator allows stable power generation performance.